Refuge: Nisqually NWR Complex

Title: Estuary Restoration Monitoring Handbook

Project Description: A rapidly growing number of estuary restoration projects are ongoing or in the planning stages throughout the Northern Pacific LCC. Pre and post restoration monitoring are essential components, but methodology and capacity to accomplish a feasible monitoring effort lags behind. This project would be designed to develop a monitoring handbook for estuary restoration practitioners, based on existing and past projects.

Over the past 20 years, the USGS Western Ecological Research Station has been developing monitoring methods to examine biophysical changes in tidal marsh restoration areas. Those diverse projects have led to the development of a set of monitoring tools used across a wide range of restoration projects, but they have not yet provided standard operating procedures for undertaking these monitoring methods. This proposal would result in the development of a monitoring handbook based on existing methods that can be treated as a "living" document that incorporates improved and new methods as they are developed by the restoration science community. The result would be an online tool to allow for selection of appropriate monitoring methods and downloadable SOPs to undertake sampling.

Nisqually NWR provides one example of an integrated monitoring approach, including a suite of ecological, biotic, and physical measures. This 762 acre estuary restoration project is the largest of its kind in the Pacific Northwest. Pre and post restoration monitoring are critical components of any estuary restoration project, to assess project outcomes, evaluate whether objectives are being achieved, to support adaptive management decisions, and investigate the implications of climate change and sea level rise in relation to major estuary restoration projects. A concise and feasible monitoring approach is needed on Refuges and other natural resource areas in the NPLCC. In addition, a more standardardized approach among restoration projects is needed so that project outcomes can be compared across the larger geographic scale.

A cooperative science team has been established at Nisqually NWR to support monitoring efforts. Information on this effort can be found at the partner website nisquallydeltarestoration.org. Monitoring of this large estuary restoration project is crucial not only to support the Nisqually restoration project, but also to provide needed information on estuary restoration science for others working on similar projects elsewhere, including on other Refuges. Monitoring and methods developed at Nisqually NWR can provide a model or template for others. Informal coordination is already ongoing with several other restoration projects both within and outside Puget Sound. The handbook would have direct application at Nisqually NWR to help guide long term estuary restoration monitoring, as well as at other Refuges in the NPLCC.

Partnerships: The science partnership includes USGS, the Nisqually Indian Tribe, and Nisqually NWR. This project would be led by the USGS Western Ecological Research Station assisted by project partners.

Cost Estimate: Estimated cost of $40K for USGS for labor, data analysis, and development of the handbook. An interagency agreement is in place and potentially could be modified or a new agreement developed.